

20. (cancelled)

46. (cancelled)

48. (new) A system comprising a shift reactor having a reaction region including a water gas shift catalyst and a carbon monoxide adsorbent, wherein said shift reactor is adapted to receive a gas stream containing hydrogen and carbon monoxide from an upstream reactor, and wherein said adsorbent is adapted to adsorb carbon monoxide at substantially ambient temperature and pressure conditions and to desorb carbon monoxide at normal operating temperature and pressure conditions for said shift reactor which are above said ambient temperature and pressure conditions.

49. (new) A system for removing carbon monoxide from a hydrogen-containing stream comprising:

a shift reactor having a reaction region including a water gas shift catalyst and a first carbon monoxide adsorbent, wherein said shift reactor is adapted to receive a gas stream containing hydrogen and carbon monoxide, wherein said first adsorbent is adapted to adsorb carbon monoxide at substantially ambient temperature and pressure conditions and to desorb carbon monoxide at normal operating temperature and pressure conditions for said shift reactor which are above said ambient temperature and pressure conditions; and

a rotating pressure swing adsorber vessel housing a second carbon monoxide adsorbent adapted to receive an effluent stream from said shift reactor, wherein said rotating vessel includes two fixed valve faces, an adsorption region, a depressurization region, a purge region, and a pressurization region.